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SOUTH AUSTRALIAN SHELLS.

(Including descriptions of New Genera and Species).

(By BERNARD C. COTTON & F. K. GODFREY).

PART XIII.

TROCHIDAE (Contd.)

Subfamily—CALLIOSTOMATINAE.

Shell generally conical, with angular periphery; columella simple above, not folded, and either simply concave below or slightly truncate and toothed, or cylindrical, strongly plicate. Operculum thin, circular, corneous, many whorled. Distribution—All seas, from low tide mark to 500 fathoms. Fossil—Secondary. Animal having the epipodial lobes large, with three or four pairs of cirri; frontal lobes small, simple or fringed; muzzle rather large, fringed at its extremity; tentacles long, ciliiform; ocular peduncles distinct, but short; foot large, truncated in front. Radula has the central and four to five lateral teeth with irregularly oval body, and rather long pointed cusps, their outer edges serrate; marginals numerous, 30 to 50, narrow, with narrow serrate cusps.

Calliostoma Swainson 1840 (= *Zizyphinus* Gray 1840: = *Conulus* Nardo 1840: = *Lischkeia* Fischer 1880: = *Eucasta* Dall 1889). Imperforate or rarely umbilicate, conical, rather thin; whorls smooth, spirally ridged or granular, the last angled at the periphery; aperture quadrangular; columella simple, usually ending in a slight tooth at the base. Operculum thin, circular, horny, many whorled. (Type—*Trochus conulus* Linné, from the Mediterranean). The genus is found in all seas, ranging from low tide mark to 500 fathoms.

Calliostoma in the restricted sense is not found in South Australian seas. Our shells are located in the following subgenera:—

Fautor Iredale 1924 (subgenus). Iredale proposed this as a full genus for the small Austral species of *Calliostoma*, naming *Z. comptus* A. Adams from New Caledonia, as type, stating on the authority of Lt.-Col. Peile, that the radulae of the Austral species in the Gwatkin Collection, now in the British Museum, show notable differences from those of the Northern forms, the true *Calliostoma*, and also, as in the Palaearctic, the small forms are separable from the large similarly named species. An examination of the radulae in the S.A. Museum collection reveals but slight differences from true *Calliostoma*. *Fautor* is definitely of no more than subgeneric rank. Here are included the southern Australian: *allporti* Tenison-Woods, *columnarium* Hedley & May, *hedleyi* Pritchard & Gatliff, *legrandi* Tenison-Woods, *retarium* Hedley & May, *zietzi* Verco.

Spicator (subgenus nov.). Shell small, broadly conical, imperforate; sculpture of spiral lirae crossed by stout, slightly obtuse, oblique ridges; interstitial pits deep, rhombic, smooth; points of intersection of spirals and axials produced into spiniform granules; body whorl with a peripheral and subperipheral lira, the two together forming a truncated, sulcated keel. Type—*C. spinulosum* Tate from Moonta Bay, S.A. The type species is easily distinguished by its size and peculiar prickly sculpture. It does, however, recall the *C. rubropunctatum* Adams from North Australia, and that species may belong to *Spicator*.

Salsipotens Iredale 1924 (subgenus). The remarks by Iredale concerning *Fautor*, were made to apply equally to this group except that *Salsipotens* is set up for the larger species. Type—*Trochus armillatus* Wood: = *T. meyeri* Philippi. As in the case of *Fautor*, we deem this but of subgeneric rank and not a full genus as Iredale intended. Here, as well as the type which is South Australian, we include our species *rubiginosum* Valenciennes = *nobile* Philippi, *splendidum* Philippi, *ciliare* Menke and *australe* Broderip.

Sinutor (subgenus nov.). Sinistral, conical, imperforate, with spiral linear sculpture and somewhat convex base. Type—*Zizyphinus incertus* Reeve, of southern Australia and Tasmania. This subgenus is, as far as we can at present determine, monotypic. The characteristics are the sinistral form and the somewhat convex base which is obtusely angled.

C. allporti Tenison-Woods 1875 (*Zizyphinus*) (= *Trochus tinctus* Watson). Pl. 1, fig. 1. "Allport's Calliostoma." Tumidly conical, imperforate, rather solid; light translucent buff colour; dotted both on the spiral and basal cinguli with minute light chestnut spots; whorls about six, protoconch acute; adult whorls encircled by granular lirae, six on the penultimate and upper surface of last whorl, the beads distinct, rounded; base with about ten scarcely granulose concentric lirae; suture canaliculate; last whorl rounded at the periphery, slightly convex beneath; mouth obliquely quadrate, nacreous within; outer lip lirate within; bidentate below; inner lip simple. Height 11, diam. 9 mm. Rare, on shore, Guichen Bay; dredged, Beachport, Cape Wiles, Royston Head, Backstairs Passage, 17-200 fathoms. (Type locality—Islands in Bass Straits). A translucent, small, tumid shell, in habit much resembling a *Thalotia*. When immature the periphery is angular. Flindersian specimens from 100 fathoms and deeper are smaller, more delicate in form and sculpture. One from 100 fathoms off Cape Pillar is a typical deep water form.

C. columnarium Hedley & May 1908. "The Cape Pillar Calliostoma." Pl. 1, fig. 2. Rather solid, imperforate, turbinate, angled at the periphery; buff colour; three spiral keels appear on the second whorl, then increasing in number but decreasing in strength, till behind the aperture they are represented by twenty engraved spiral lines extending from the suture to the centre of the base; the spiral keels are decussated by faint oblique growth lines; whorls five-and-a-half, including a protoconch of a whorl-and-a-half, which is tilted, malleated, and concluded by a small varix; aperture oblique, rhomboidal; outer lip simple; columella thickened, insertions joined by a thin callus. Height 7.5, diam. 8 mm. Dredged in 100 fathoms off Cape Wiles. (Type locality—100 fathoms, seven miles east of Cape Pillar, Tasmania). In general appearance this resembles *C. legrandi* Tenison-Woods, but differs by blunter keel and the distant engraved spirals.

C. hedleyi Pritchard & Gatliff 1901 (not *C. ornatum* Lamarck [*Trochus*] from Port Elizabeth, South Africa). "Hedley's Calliostoma." Pl. 1, fig. 3. Conical, imperforate, apex acute; yellowish-brown, with reddish markings either in maculations or spots; whorls eight, convex, often tumid below the well defined suture; protoconch smooth; first two adult whorls trellised; following whorls with spiral, irregularly granular threads of unequal size, usually six on the antepenultimate, increasing by division of some of them to eight on the penultimate whorl and twelve on the body whorl above the periphery at the outer lip, twelve to sixteen

on the base, these latter are often spotted with red; granulations on base flattened; base convex, umbilical region narrowly impressed; aperture subrhomboidal; outer lip thin, smooth inside; columella oblique, smooth, rounded, somewhat excavately flattened at its base from within, not toothed. Height 15, diam. 14 mm. Uncommon; beach, Guichen Bay, Point Sinclair 12 x 16 mm., and St. Francis Island; also Western Australia—Hopetoun, Esperence, and Ellensbrook. Dredged—Beachport to Yankalilla Bay and Cape Borda, 9-130 fathoms. (Type locality—Dredged five to seven fathoms off Rhyll, Phillip Island, Western Port, Victoria). Has been wrongly identified as *Trochus decoratus* Philippi, which is a more acutely conical shell with flatter whorls and larger granules. The species is very variable. The colour ornament may be distinctly marked with distinct brown spots on a peripheral carina, and brown dots on the basal spirals, and axial flames on the whorls; or the shell may be uniform cinnamon brown with inconspicuous dots on the periphery, and perhaps showing in the suture. The spirals may be broad, close together, nearly flat and smooth, with a central incision as though about to divide, or they may be narrow and numerous; they may be more or less granular or tuberculate. The variations seem all to grade into one another.

C. legrandi Tenison-Woods 1876 (1875) (*Zizyphinus*). Pl. 1, fig. 4. Straightly conical, imperforate, solid, rather thick; yellowish-flesh-colour; spiral riblets, numerous, smooth, alternately larger and smaller, about eight on the penultimate whorl, about fourteen on the base; spire conic, straight; suture scarcely visible except for a slightly wider cingulus above them; whorls about six, flat, the last angular, nearly flat beneath, shortly deflexed at aperture; aperture rhomboidal, oblique, with two prominent riblets inside the upper lip, basal lip thickened, columella almost straight. Height 13, diam. 13 mm. Aperture (inside) 6 x 6 mm. Dredged—Beachport, Cape Jaffa, Cape Borda, 7 miles S.W. of Newland Head, Backstairs Passage—17 to 200 fathoms. (Type locality—Chappell Island, Bass Straits). A small smooth-ribbed form. Most examples have their sides quite straight, some have the whorls slightly concave, others slightly convex, and in one the whorls were feebly gradate. Some individuals have the brown ground colour and the spiral liræ a light purple. Flindersian deep water forms are more delicate in sculpture and formation.

C. retiarium Hedley & May 1908. Pl. 1, fig. 5. Retiarius, a gladiator furnished with a net, from a fancied resemblance of the sculpture of the shell. Conical, subperforate, with sharply keeled periphery, overlapping spire whorls and a flat base; colour uncertain; small spiral threads parted by wider interstices, seven

on the penultimate, and up to twenty on the last whorl, of these a double row compose the peripheral keel; on either side of the keel the interstices are wider than usual; irregular oblique wave-like radial folds; twenty-two on last whorl, which raise beads on the keel rows, and there cease abruptly; on base, incipient radials bead the inner spirals; whorls about six or seven; aperture oblique, trapezoidal; outer lip simple, sharply angled by the periphery; columella insertion slightly reflected over the minute umbilicus. Height 7, diam: 6 mm. Dredged, 95-100 fathoms south of Cape Wiles. (Type locality—100 fathoms, seven miles east of Cape Pillar, Tasmania.)

C. zietzi Verco 1905. Text fig. 1. Mr. Zietz was a former director of the South Australian Museum. Conic, imperforate, moderately solid; horn coloured, peripheral band white, main cinguli obscurely dotted with light chestnut, peripheral band with larger and plainer spots; whorls eight, including protoconch of one smooth turn, slightly mammillate; first two whorls rounded, next three straight sloping, last two rather convex; suture moderately deep, slightly overhung by peripheral lira; penultimate whorl with six spiral cinguli and two inter-liral threadlets; body

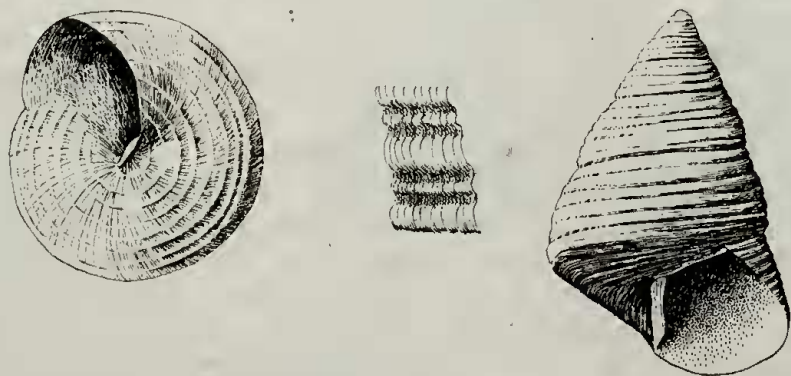


Fig. 1—*Calliostoma (Fautor) zietzi* Verco x $4\frac{3}{4}$ (Left and right). Enlarged sculpture (centre) [after Kesteven].

whorl with six cinguli, rather narrower than the interspaces and five threadlets, barely angulated below its centre by a stouter cord; base rounded, with eight concentric lirae, flat, much wider than the interspaces; spire and base finely obliquely incised with growth lines; aperture roundly quadrate; columella nearly straight, slightly oblique and excavated, subtruncate below; outer lip simple, crenulated by cinguli. Height 8, diam. 5 mm. Dredged—Backstairs Passage; Gulf St. Vincent; off Porpoise Head; S. of Funk Head; Beachport; 16—200 fathoms. (Type locality—Backstairs Passage, at 12, 17, and 20 fathoms; nine dead). Hopetoun, 35 fathoms, Western Australia.

C. spinulosum Tate 1893 (not *Zizyphinus rubropunctatus* A. Adams 1851, from North Australia). "The Prickly Calliostoma." Pl. 1, fig. 6. Broadly conical, imperforate, pale reddish-yellow with small white blotches; spiral lirae, three on the penultimate whorl, crossed by equal sized, stout, slightly obtuse, oblique ridges; interstitial pits deep, rhombic, smooth; points of intersection of spirals and oblique costae are produced into spiniform granules; spiral ridges on body whorl are increased by a slender lira interposed between the first and the second, and by a subperipheral lira nearly equal in size to the peripheral one, the two together forming a truncated sulcated keel; whorls six-and-a-half, slightly imbricating; base almost flat with about six concentric lirae, somewhat depressed, subacute, and showing a tendency to sub-granulose, crossed by strong radial growth lines. Height 5, diam. 4.5 mm. Uncommon, beach Moonta Bay, also Western Australia—Bunbury beach. Dredged, Beachport to Neptune Islands, 9-110 fathoms, also Bunbury, Western Australia, 22 fathoms. (Type locality—Moonta Bay). Trellised, and set as it were with prickles, this species resembles *C. rubropunctatum* Adams from North Australia, but differs by its sub-imbricating whorls and fewer lirae.

C. meyeri Philippi 1848 (*Trochus*) (= *T. armillatus* Wood: = *Z. armillatus* Reeve 1863: = *T. levis* Hombron & Jacquinot 1854, not *T. levis* Wood or Chemnitz: = *Z. euglyptus* Adams 1854). Pl. 1, fig. 7. "Meyer's Calliostoma." Strictly conical, carinated, imperforate, thin but rather solid; shining, pale yellowish or pinkish, with irregular, rather pale vertical bands of light yellowish-brown, often broken into maculations, and radiating on base; numerous spiral granose lirae, seven on the penultimate, the antepenultimate, and upper surface of last whorl; sometimes there are interstitial threads between the granose lirae; the flat base has twelve or thirteen concentric lirae, inner ones stronger, decidedly beaded, the three or four outer more separated, less beaded; the angular periphery is formed of a double beaded ridge; spire conic, elevated with straight lateral outlines; whorls nine; protoconch subacute, smooth; the two earlier whorls following the protoconch are tri-lirate; last whorl angular at periphery, flat beneath, indented in the centre around the insertion of the columella; mouth rhomboidal, oblique, angled on the outer part, above the angle thickened inside by a heavy callus or pearly submarginal deposit; columella oblique, arcuate, slightly toothed at base. Height 36, diam. 34 mm. Not common. Port Victor, measuring 34 x 32.5, also 34 x 31 mm.; Guichen Bay, several, all with green apices and comparatively wide; also on Ocean Beach, Kangaroo Island, and St. Francis Island. Not reported

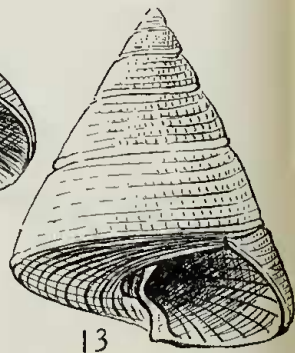
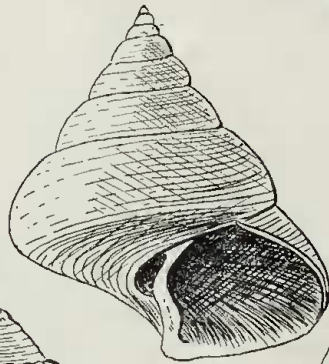
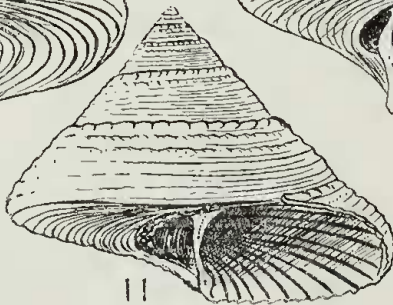
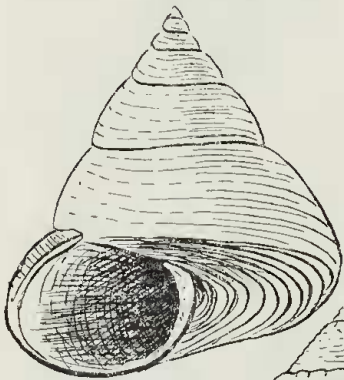
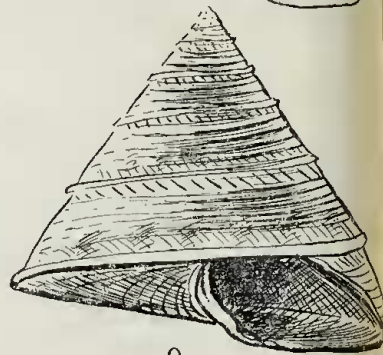
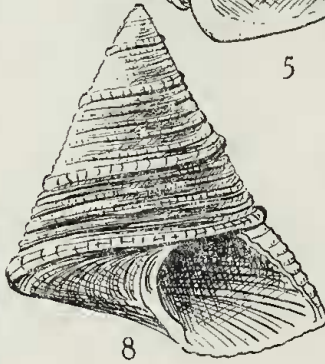
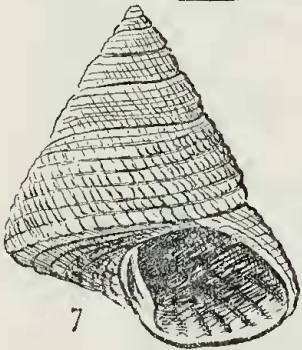
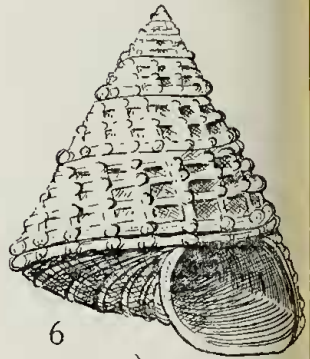
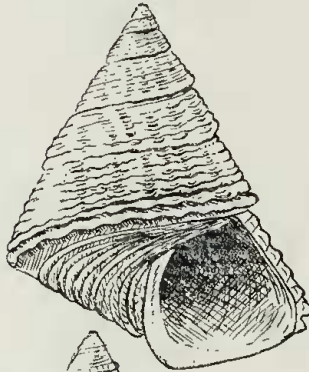
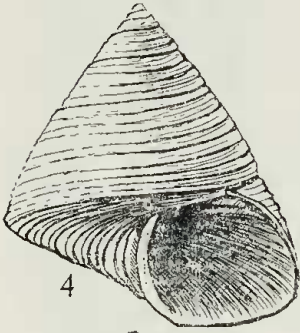
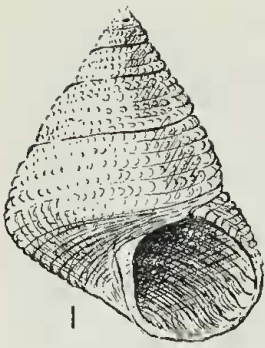


PLATE I.

Fig. 1—	<i>Calliostoma allporti</i>	Tenison-Woods	(x 3 $\frac{1}{4}$)
Fig. 2—	„	<i>columnarium</i>	Hedley & May (x 4 $\frac{1}{2}$)
Fig. 3—	„	<i>hedleyi</i>	Pritchard & Gatliff (x 2 $\frac{1}{2}$)
Fig. 4—	„	<i>legrandi</i>	Tenison-Woods (x 2 $\frac{1}{2}$)
Fig. 5—	„	<i>retiarium</i>	Hedley & May (x 5-2/3)
Fig. 6—	„	<i>spinulosum</i>	Tate (x 7)
Fig. 7—	„	<i>meyeri</i>	Philippi (x 1)
Fig. 8—	„	<i>rubiginosum</i>	Valenciennes (x 1 $\frac{1}{4}$)
Fig. 9—	„	<i>ciliare</i>	Menke (x 1 $\frac{1}{2}$)
Fig. 10—	„	<i>incertum</i>	Reeve (x 2 $\frac{1}{2}$)
Fig. 11—	<i>Astele subcarinatum</i>	Swainson	(x 1 $\frac{1}{8}$)
Fig. 12—	„	<i>scitulum</i>	Adams (3)
Fig. 13—	„	<i>multigranum</i>	Dunker (x 3)

from Western Australia. (Type locality—unknown. We designate Port Victor, S.A.). The straightly conical form, flat base, indented around the axis, and the details of sculpture, easily separate it from allied forms.

C. rubiginosum Valenciennes (*Trochus*) (= *T. nobilis* Philippi 1846, preoccupied by Muenster 1835). Pl. 1, fig. 8. "The Rusty Calliostoma." Imperforate, acutely conical, rather thin; whitish buff, radiately flamed with brown and reddish; whorls ten, plane, protoconch eroded, smooth; adult whorls spirally cingulate, cinguli six, granose, the upper five cinguli small, lower cingulus wider, more prominent, subcrenate; last whorl acutely carinated; base, concentrically encircled by about seven or eight granose cinguli, alternately buff and rose coloured; mouth subquadrate, columellar lip spirally plicate; columella subarcuate, base subnodose, with a parallel groove. Height 22, diam. 22 mm. Dredged alive at all depths from 9-22 fathoms in Backstairs Passage, Gulf St. Vincent, Investigator Straits, and Spencer Gulf; one dead and broken shell was dredged in 150 fathoms off Beachport. Beach, uncommon, St. Francis Island. Also Western Australia—Albany beach 14.25 x 13 mm., and fragments up to 23 mm. in diameter; Geographe Bay beach 17.5 x 16 mm.; dredged, King George Sound, and off Bunbury, 12-22 fathoms. (Type locality—Western Australia. We designate King George Sound). Specimen illustrated 30 mm. x 28 mm.

C. splendidum Philippi. "The Splendid Calliostoma." Rather sharply conical, somewhat swollen; whitish, variegated and spotted throughout with orange-yellow and purple-rose; whorls convexly sloping, regularly grain-ridged throughout. Height 30, diam. 27 mm. Dredged—Gulf St. Vincent, depth uncertain (Verco MSS) and Encounter Bay. (Type locality—Australia. We designate Gulf St. Vincent). In colour this species partakes very much of the character of the preceding (*rubiginosum*), the purple-rose being more conspicuous, and broken up into blotches. The shell is of rather a lighter, more tumid growth, with the basal ridge more prominent than the rest (Reeve).

C. ciliare Menke 1843 (*Trochus*) (= *Zizyphinus castra* Reeve 1863). Pl. 1, fig. 9. Pyramidal, imperforate; fulvous, with red spots along the suture; transversely striate, decussated by very delicate striae; base plane; whorls flat, margined below, ciliate-fimbriate above; mouth ovate-lanceolate, outer lip callous-margined inside. Height 24, diam. 30 mm. Uncommon, dredged, Investigator Straits, Gulf St. Vincent, Backstairs Passage, 13-17 fathoms; also Western Australia—Swan River, Esperance, on Beach. (Type locality—North-west coast of Aus-

tralia). The shell is thin, broadly depressed, and almost without sculpture. Two examples, dredged in South Australia, are beautifully ornamented on the last three whorls with a spiral line articulated brown and white like a twisted cord, below which are crescents of brown, open forwards, also with axial flames of brown growing wider as they descend to the periphery, beyond which they extend for a short distance across the base.

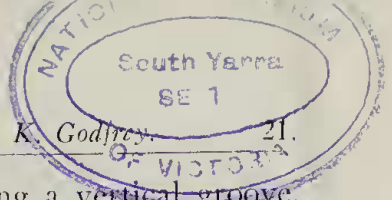
C. australe Broderip 1830 (*Trochus*). "The Southern *Calliostoma*." Conical, granulate-cingulate; with a larger supra-sutural cingulus; buff or nearly white, with spots of reddish or violaceous; whorls flat, base flat, imperforate, throat silvery. Height 25; diam. 22 mm. (Type locality—Australia). "In weed, Normanville also Hardwicke Bay, uncommon. Has the facies of a miniature *C. rubiginosum* Valenciennes" (Verco MSS). It is not represented in the British Museum.

C. incertum Reeve (*Zizyphinus*). Pl. 1, fig. 10. "The Doubtful *Calliostoma*." Shortly conical, sinistral, yellowish-white; spirally closely linearly ridged; whorls slopingly convex, last whorl obtusely angled at the base. Height 15, diam. 15 mm. Dredged, at several stations, Beachport to Cape Borda, 17-150 fathoms. (Type locality—Tasmania). Reeve's type, in the British Museum, is a dead shell, and South Australian examples are nearly half as large again. It appears to be a distinct species, and to be normally sinistral in its volutions.

Astele Swainson 1854. Shell nacreous, pyramidal or trochiform, profoundly umbilicate, unarmed, base convex, columella indistinct, aperture broader than high, the margin of both lips thin. Operculum large, round, corneous, multispiral, with an ovate, central nucleus. Type—*Astele subcarinatum* Swainson.

Astelena Iredale 1924 (subgenus). Apical features suggest a loosely coiled form of *Calliostoma*. Spire slender, its lateral outlines concave; last whorl rounded at the periphery and convex beneath; aperture rounded, outer and basal lips forming a half circle; columella deeply arcuate ending in an inconspicuous tubercle at base; umbilicus deep, funnel-shaped, bounded by an angle and of a different character from *Astele*. Radula of the type is easily separable from that of *subcarinatum* the type of *Astele*. Type—*Zizyphinus scitulus* A. Adams. *C. multigranum* Dunker may belong here.

Callistele (subgenus nov.). Shell conical, whorls straight sloping, spirally sculptured; suture linear; periphery acutely angular, base flatly rounded; umbilicus narrow; aperture roundly quadrate; outer lip convex, its margin sinuously convex below the suture and concave towards the periphery; basal lip convex, somewhat effuse, with callus at base partly bordering the



umbilicus and attached to the columella along a vertical groove. Operculum corneous, multispiral, nucleus central, with a radial fringe-like film over the inner portion of each spiral. Radula formula— ∞ . 1. 5. 1. 5. 1. ∞ . Central rachidian heart-shaped, the other rachidians with trilobed cusps, a single lateral with one cusp trilobed at its base; marginals many, unicuspidate, not serrated. Genotype—*Astele calliston* Verco.

A. subcarinatum Swainson 1854 (= *Eutrochus perspectivus* A. Adams 1863:—*Zizyphinus subgranularis* Dunker 1871:—*C. adamsi* Pilsbry 1889). The Subcarinate *Astele*. Pl. 1, fig. 11. Shell broader than high; pale fawn colour with faint transverse waves of reddish brown; whorls above scarcely convex, marked by six to seven elevated, smooth, convex striae, which leave a flattened margined rim at the top of each whorl; body whorl beneath marked with concentric grooves which are decussated near the umbilicus; margin of body whorl slightly carinated; there is a depression between the margin and the second elevated stria on the upper surface, the first, or that next the margin being very slender; the striae on the base assume the appearance of grooves, which are wider apart as they approach the umbilicus, and the three more immediately adjoining are crossed by transverse striae which produce a granulated appearance; umbilicus interior white. Height 25, diam. 37 mm. Dredged—Beachport to Francis Island, 12—200 fathoms. Also dredged Western Australia—Hopetoun, 35 fathoms. (Type locality—Tasmania). Verco took this species alive in Gulf St. Vincent in 16½ fathoms, in mud and pieces of coralline, in association with *Surcula quoyi*. The foot is greyish white mottled with rusty brown. Its upper surface is close-lined obliquely from behind forwards with brown, and has minute white spots. The operculum is large, round, corneous, and multispiral, with an ovate central nucleus. The tentacles are of moderate length, spotted light brown and white; the eyes are at the outer and dorsal side of their extreme bases. There are four white cirri on each side projecting from the margin of the mantle and this is minutely fimbriated, except a white thin wavy lappet from just behind the eye to the first cirrus which is entire in its margin. The formula of the radula is 24. 1. (1. 4. 1. 4. 1.) 1. 24,—85 rows. The marginals are long and narrow, diminishing outwardly and well serrated at the distal margin. The lateral is very large and thick and possesses two stout cusps. The most external rachidian is the largest and has a large unserrated cusp. Then follow four rachidians each with a long narrow tongue-like serrated cusp. The central has also a long narrow serrated cusp.

A. scitulum A. Adams 1854 (*Zizyphinus*). Pl. 1, fig. 12. "The Elegant *Astelena*." Shell small, thin, umbilicate, with slender elevated spire and broad body whorl; yellowish, obscurely

maculate with brown; whorls about seven, convex, the apical one smooth, following three or four whorls granulate, the rest densely spirally striate with light incremental lines which decussate the lirulae, especially beneath; spire slender, its lateral outlines concave, last whorl rounded at the periphery or obtusely angled, convex beneath; aperture rounded, outer and basal lips thin, forming a half circle, columella white, deeply arcuate, ending in an inconspicuous tubercle at base; umbilicus deep, funnel-shaped, bounded by an angle. Height 12, diam. 11 mm. Robe, beach, (Cotton 1934, six examples). These are the only ones we have seen from South Australia, and the specimens are apparently extra-limital, as the species is Peronian. It occurs in Victoria, and Iredale refers to it as a common Sydney shell. May did not record it in his *Illustrated Index of Tasmanian Shells 1923*. (Type locality—New Zealand, evidently in error, as the species is not reported from there).

A. calliston Verco 1905. Text fig. 2. Conical, thin; purple-brown, with oblique, axial, creamy, rhomboidal flames, from suture to suture; a few creamy spots on the peripheral carina; every whorl encircled by four articulated colour bands, which in the white areas are of a more opaque white than the rest of those areas, and are crossed by narrow red lines, while in the purple areas they are of a deeper purple tint, and are crossed by narrow axial white lines; base of a lighter tint, the outer six cinguli rose pink, dotted with creamy white; columella and umbilicus white, bordered outside with green, which tints the inner basal cinguli and curls around the columella into the throat; outer lip inner edge golden-brown and white, interior shining, nacreous; whorls nine including a protoconch of two smooth turns; whorls straight sloping; spiral lirae crowded, about twenty-four on the penultimate, crossed by oblique crowded growth striae; suture linear, immediately beneath the prominent

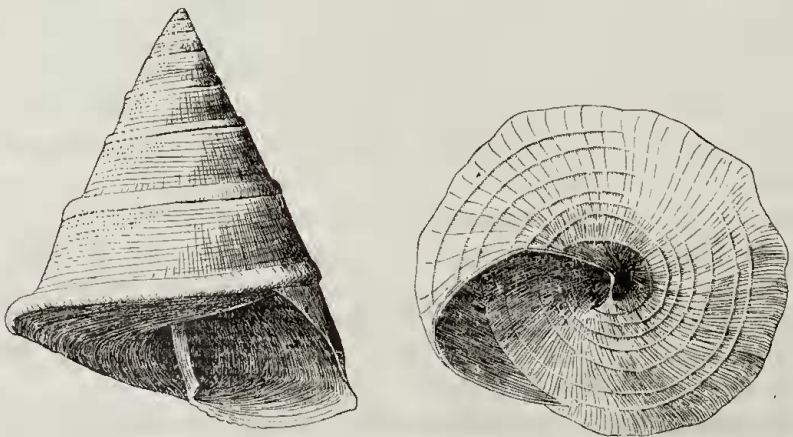


Fig. 2—*Astele* (*Callistele*) *calliston* Verco x 4 [after Kesteven].

peripheral cord which gradates the spire; periphery acutely angular, with a projecting rounded carina, spirally closely engraved on its upper surface, axially crossed by rounded striae with about sixteen rounded invalid tubercles; base flatly rounded with seven concentric narrow lirae; umbilicus narrow, faintly axially incised; aperture oblique, roundly quadrate; outer lip slightly convex, thin, smooth within, margin sinuously convex below the suture, concave towards the periphery; basal lip convex, slightly effuse, smooth within; callus at base partly bordering the umbilicus and attached to the columella along a vertical groove. Operculum horny, multispiral, nucleus central, with a radial cellular fringe-like film over the inner three-fourths of each spiral. Height 12, diam. 10 mm. Radula— ∞ . 1. 5. 1. 5. 1. ∞ . Central rachidian heart-shaped, narrow free end surmounted by small, slightly serrated denticle; the other rachidians with trilobed cusps, which gradually enlarge outwards; a single lateral with one cusp trilobed at its base; marginals many, unicuspidate, not serrated. Dredged—Spencer Gulf, 20 fathoms, many alive and dead. (Type locality—Spencer Gulf, 20 fathoms). Colour is variable. Some are pinkish-brown, with white peripheral tubercles, and four pink cinguli on each whorl articulated with white, the larger white spots lying vertically between the supra-sutural tubercles, while narrower, oblique white spots alternate in groups with them.

A. multigranum Dunker 1871 (*Zizyphinus*). Pl. 1, fig. 13. Turreted-conic, narrowly umbilicate; light yellow; whorls eight, nearly plane, encircled by numerous unequal granuliferous riblets; sutural cingulus elevated, subundulate, spirally striate, pallidly tessellate, base a little convex, with about sixteen subgranose alternately larger and more delicate riblets; umbilicus narrow, surrounded by a white plate; columella oblique, terminating in a pearly denticle. Height 12, diam. 10 mm. Dredged—Investigator Straits; Gulf St. Vincent; Backstairs Passage; Yankalilla Bay; Western Cove; 3-22 fathoms, in weed. (Type locality—Gulf St. Vincent). In some individuals the whorls are quite flat but for the slight projection of the sutural cingulus; in others the whorls are distinctly swollen and the base more convex, so as to make the periphery more rounded. Again, in some, the later whorls have the axial striae less valid and so the spiral lirae are less granular.

Thiele, Die Fauna Sudwest Australiens 1930, p. 565, introduces *Calliostoma excellens* sp. nov. (unfigured) from Houtman Abrolhos. This appears to be a direct synonym of *C. rubiginosum* = *nobile*. A second species *Calliostoma modestum* sp. nov. (unfigured) from Sharks Bay, W.A., is probably a subspecies of *C. hedleyi*.

Genus **COLUBRARIA** Schumacher, in South Australia.

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In the South Australian Naturalist, XIII., part 3, pp. 92, 93, 1932, we dealt with family *Fusidae*. We have since examined more material and literature and consider that a revision is necessary.

According to Thiele's diagnosis of genus *Fusus* (Handbuch der systematischen Weichtierkunde 1929 p.329), our species cannot be located there. The probable location appears to be *Colubraria* Schumacher 1817 (= *Epidromus* Morch 1852) which is placed by Thiele in family *Gymatiidae*.

We suggest the following nomenclature for South Australian species—

Colubraria reticulata A. Adams (= *Fusus mestayerae* Irelande). Beach to 200 fathoms.

C. schoutanica Hedley. 100 fathoms off Cape Wiles (Hedley)

C. bednalli Brazier 1875 (*Triton* [*Epidromus*]). "Bednall's *Colubraria*. Shell elongately turreted, thick, with six rather indistinct, rounded, elongated varices; eight convex whorls with regular close set longitudinal ribs and spiral striae; ribs noduled at the suture; colour when alive, dark mahogany brown, when dead, white; some from Corny Point have two spiral rows of small square brown spots on each spire whorl and four on the body whorl. Height 22, diam. 7.5 mm. Common on beaches in the South East, less common at Middleton, Corny Point, Ponderowie Beach, Spencer Gulf; and dredged to 150 fathoms. Also Western Australia—Rottnest.

One specimen in the S.A. Museum (Reg. No. D.11414) from Robe (Cotton) is sinistral. (Type locality—Guichen Bay, South Australia). A narrower species than *reticulata*.

DONATION.

Dr. W. G. Torr, of Brighton, has kindly sent along one guinea as a gift towards the publication of the part in this issue on South Australian Shells.